REMARKS

In the Office Action mailed July 2, 2002, Claims 35 and 39-47 are rejected under 35 U.S.C. §112, second paragraph as being indefinite. Claims 35 and 39-47 are rejected under 35 U.S.C. §112, first paragraph for lack of enablement. Claims 35 and 39-44 are objected to as containing subject matter drawn to a non-elected invention.

I. Rejections under 35 U.S.C. §112, first paragraph

Claims 35 and 39-47 are rejected under 35 U.S.C. §112, first paragraph for lack of enablement. Claims 39-47 have been cancelled, thus obviating any grounds for rejection based upon those claims.

As to Claim 35, the Examiner states at page 4 of the instant Office Action that, "...while being enabling for methods of identifying a chemical that specifically binds to a polypeptide having an the (sic) amino acid sequence of SEQ ID NO: 2, does not reasonably provide enablement for methods encompassing polypeptides having less than 100% identity to SEQ ID NO: 2." Applicants respectfully disagree with the Examiner's assertion.

The first paragraph of 35 U.S.C. §112 requires that the specification describe how to make and use the claimed subject matter. As set forth in *In re Marzocchi*, 169 USPQ 367, 369 (CCPA 1971),

> The first paragraph of §112 requires nothing more than objective enablement. How such a teaching is set forth, either by the use of illustrative examples or by broad terminology, is of no importance.
>
> As a matter of Patent Office practice, then, a specification disclosure which contains a teaching of the manner and process of making and using the invention in terms which correspond in scope to those used in describing and defining the subject matter sought to be patented must be taken as in compliance with the enabling requirement of the first paragraph of §112 unless there is reason to doubt the objective truth of the statements contained therein which must be relied on for enabling support.

By his comments in the instant Office Action, the Examiner asserts that one skilled in the art could not find or make the polypeptides commensurate in scope with those claimed. However, no reasons have been provided which would lead one to doubt that the specification describes how to make and use the claimed subject matter. The methods disclosed in the instant specification and known to those skilled in the art, at the time the subject application was filed, were more than adequate to allow one to make and use the claimed subject matter.

The claims define a limited genus of proteins, i.e., polypeptides having an amino acid sequence selected from the group consisting of a) SEQ ID NO:2, b) a sequence having at least 70% identity with SEQ ID NO:2, and c) a sequence having sequence identity with at least 20 consecutive amino acids of SEQ ID NO:2. As instantly claimed, those polypeptides must have "at least one biological activity of a GABA B receptor" (defined at page 5, lines 1-2 of the instant specification). There is no need for detailed protein structure-function analyses called for by the Examiner, because routine GABA binding assays may be used to select appropriate variants.

Given a polynucleotide sequence, such as that of SEQ ID NO:2, disclosed in the instant application, and the state of the art at the time the instant application was filed, one skilled in the art could readily design oligonucleotide primers for the amplification by PCR of similar polynucleotide sequences present in a cDNA library. Further, the knowledge that a polynucleotide encoding a particular type of polypeptide (e.g., the GABA-B receptor protein (SEQ ID NO:2) disclosed in the instant application) is expressed in specific animals (i.e., insects), as is the case in the instant application, would allow the practitioner to select a cDNA library that is most likely to contain polynucleotides encoding variants of a given polypeptide, thereby further simplifying the identification process. Following the amplification of target sequences from an appropriate cDNA library, the sequencing of the polynucleotides (and assembly if required) can be performed rapidly using routine, automated methods, readily available in both academic and industrial settings.

Making the polypeptides encoded by these polynucleotides may be performed using a variety of expression systems that are also well known and readily available to those skilled in the art. The specification also provides an

enabling disclosure of an activity of the claimed polypeptides (i.e., the altering of intracellular cAMP concentration). Assaying a polypeptide for its ability to alter intracellular cAMP concentration would have been routine for one skilled in the art based on the methods described at pages 11 and 16 of the instant specification.

Genomics research, in both the academic and industrial setting, has undergone tremendous growth and advancement in the past 10-15 years. Where identifying a polynucleotide sequence and the polypeptide encoded thereby was once a major undertaking, modern methods of high-throughput nucleic acid sequencing and sequence assembly have greatly simplified the process. At the time the instant application was filed, an entire industry had already developed around the identification and testing of variant polynucleotides and polypeptides.

Therefore, the disclosure of the instant application contains the essential elements that would allow one skilled in the art to identify expressed variant polynucleotides and polypeptides from cDNA libraries: (i) polynucleotide and polypeptide sequence data to facilitate the design of oligonucleotide primers for the identification of variants (e.g., polynucleotides that encode polypeptides with 70% sequence identity to SEQ ID NO:2); (ii) knowledge of the specific animals which express the polynucleotides and polypeptides thereby allowing selection of an appropriate cDNA library from which to identify these variants, and (iii) an assay for the identification of variants and fragments of SEQ ID NO:2 with the disclosed biological properties (described on pages 16-19 of the instant specification). Given this enabling disclosure, one skilled in the art would be able to both find and make variants with 70% sequence identity to the polypeptide of SEQ ID NO:2 and the recited fragments thereof.

Furthermore, the specification describes how to use the claimed polypeptides. For example, the claimed polypeptides could be used in searching for new insecticidal compounds. Such use does not require any knowledge of the precise biological function of the target polypeptides. Thus, the recited feature of "having at least one biological activity of GABA-B receptor" provides a more detailed definition of the claimed polypeptides that is needed for their use.

The Examiner has failed to provide any reasons why the methods set forth in the instant specification would not allow one skilled in the art to practice the claimed subject matter. Rather, the Examiner has set forth generalized, subjective statements in an attempt to rationalize the enablement rejection. No objective standards or evidence whatsoever have been presented to justify these statements.

The Examiner refers to the supposed "complex nature of the invention" and the "state of the prior art" as justification for the rejection. As explained above, the state of genomics research at the time of filing of the present application (as evidenced by the references provided in the instant application) would allow one to routinely make and use the claimed polypeptides. Applicants direct the Examiner's attention to *Ex parte Mark*, 12 U.S.P.Q.2D 1904, (BPAI 1989), which stands for the proposition that claims directed to "biologically active" mutant proteins are enabled if, at the time of filing, it would have been routine to generate the mutants and to identify which of those mutants retained biological activity using a conventional screening assay.

Therefore, given the disclosed polynucleotide and polypeptide sequence data, animal-specific expression and robust biological assay, applicants submit that Claim 35 is fully enabled and respectfully request the Examiner reconsider and reverse his rejection of Claim 35 under 35 U.S.C. §112, first paragraph, for lack of enablement.

II. Rejections under 35 U.S.C. §112, second paragraph

Claims 35 and 39-47 are rejected under 35 U.S.C. §112, second paragraph as being indefinite. Claims 39-47 have been cancelled, thus obviating any grounds for rejection based upon those claims.

Claim 35 has been amended to substitute the word –identifying-- for the word "determining". Given the Examiner's indication at the bottom of page 3 of the instant Office Action, applicants submit that Claim 35 is in compliance with 35 U.S.C. §112, second paragraph, and respectfully request the Examiner reconsider and reverse his rejection thereof under 35 U.S.C. §112, first paragraph, as being indefinite.

III. Claim objections

Claims 35 and 39-44 are objected to by the Examiner as containing subject matter drawn to a non-elected invention. Claims 39-44 have been cancelled, thus obviating any grounds for rejection based upon those claims. As Claim 35 has been amended to remove therefrom what the Examiner contends is the subject matter of a non-elected invention, Applicants request the Examiner withdraw his objection to Claim 35.

CONCLUSION

Applicants have amended Claim 35 and have added Claims 48-55. Applicants contend that such amendments add no new matter and find support in the specification. Attached hereto, please find a page captioned "Version with markings to show changes made."

Applicants submit that the instant application is in condition for allowance. Accordingly, reconsideration and a Notice of Allowance are respectfully requested for Claims 35 and 48-55. If the Examiner is of the opinion that the instant application is in condition for other than allowance, he is requested to contact the Applicants' attorney at the telephone number given below so that additional changes to the claims may be discussed.

Respectfully submitted,

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Version with markings to show changes made

In the specification:

The specification has been amended to delete the heading at page 3, line 1 and insert that heading at page 2, line 5.

In the claims:

The claims have been amended as follows:

35. (Twice Amended) A method of identifying a chemical which specifically binds to a polypeptide having at least one biological activity of a GABA B receptor, ~~said~~ the method comprising:

exposing to at least one chemical under conditions permitting interaction therewith a purified ~~and/or isolated~~ polypeptide comprising an amino acid sequence selected from the group consisting ~~which has at least 70% identity with a sequence of~~ a) SEQ ID NO: 2, ~~SEQ ID NO: 4 or SEQ ID NO: 6 or a host cell stably transformed or transfected with a purified, isolated nucleic acid with~~ b) a sequence having at least 70% identity with ~~a sequence of~~ SEQ ID NO:~~1~~2, ~~SEQ ID NO: 3 or SEQ ID NO: 5 to a chemical or to a mixture of chemicals under conditions permitting interaction of said chemical with said polypeptide~~ and c) a sequence having sequence identity with at least 20 consecutive amino acids of SEQ ID NO: 2, and

~~determining~~ identifying the chemical specifically binding to ~~said~~ the polypeptide.

As explicitly set forth in **37 C.F.R. Section 1.121(c)(1)(ii), last sentence**, a marked up version does not have to be supplied for an added claim or a cancelled claim as it is sufficient to state that a particular claim has been added, or cancelled, and this has been so stated in the Amendment.

In particular, in the instant application, Claims 39-47 have been cancelled and Claims 48-55 have been added.